





5 ° C [°] C	SY CSY C	Agilent Spectrum Analyzer - Swept	AC SERVER 10000 GHz PNO: Fast TI IFGain:Low	EINT ALION A Ar Trig: Free Run Av Atten: 30 dB	vg Type: Log-Pwr gjHold: 10/10	09:39:13 AM Sep 05, 2022 TRACE 2 2 4 5 5 TVPL NUMNIN
19 19 ·	6 B 6 B	Ref Offset 6.71 10 dB/div Ref 20.00 dE	dB Bm		Mk	r1 2.402 6 GHz -5.693 dBm
0 0 0 0						
c C c	SY CSY C	-20.0 -30.0 -40.0	_345_			25.09 dbn
QPSK /LCH	\$ \$	-50.0 -60.0 -70.0				
		Start 30 MHz #Res BW 100 kHz	#VBW 3	00 kHz	Sweep 2	Stop 26.50 GHz 530 s (30001 pts)
C. S. P.	SP SP	1 N 1 F 3 N 1 F 4 N 1 F	2,402 6 GHz 5,693 dBn 24,675 3 GHz 36,613 dBn 4,800 8 GHz 50,163 dBn 7,196 3 GHz 50,818 dBn	n n	IDTR FORCE	IN VALUE
	\$ \$		9,506 3 GHz 49,676 dBn			
ດີເ		10 11 wsg		s	TATUS	~
A B	5 P 5 P	Aglient Spectrum Analyzer - Swept R R RF S0 Q Center Freq 13.26500	AC SENSE 00000 GHz PN0: Fast	EINT ALIGNAI Arig: Free Run Av	uto vg Type: Log-Pwr gjHold: 10/10	09:42:30 AM Sep 05, 2022 TRACE 2 3 4 5 6 TVPE
		Ref Offset 6.72 10 dB/div Ref 20.00 dE	dB BM	Atten: 30 dB	Mk	r1 2.441 4 GHz -4.626 dBm
່ັ່ວ						
29	A 24	20.0				-34 63 dbs
SK/MCH		-50.0 -60.0				
cr c	S P C P C	Start 30 MHz #Res BW 100 kHz	#VBW 3	000 kHz	Sweep 2	Stop 26.50 GHz 2.530 s (30001 pts)
	\$ \$	MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f	X Y 2.441 4 GHz 4.626 dBm 25.038 9 GHz -37.978 dBm 4.879 3 GHz 49.485 dBm	FUNCTION FUNCTION W	ADTH FUNCTI	ON VALUE
c' c		5 N 1 F 6 7 8	9.572 4 GHz 49.678 dBm	n n		
5 B C	SP SP	10 11 <		l l	TATUS	>
	A .A	Aglient Spectrum Analyzer - Swept UZ R RF 50 Q Center Freq 13.26500	AC SENSE 00000 GHz	EINT ALIGNA A	uto vg Type:Log-Pwr	09:44:53 AM Sep 05, 2022 TRACE
ດີ ເ		Ref Offset 6.73	PN0: Fast +++ IFGain:Low #/ dB 3m	Atten: 30 dB	Mk	r1 2.480 2 GHz -1.738 dBm
58	5 B 5 B					
		-10.0 -20.0 -30.0				-71.74 albe 2/-
к/нсн		-40.0 -50.0 -60.0	¢ [‡]		****	
	C . C .	Start 30 MHz #Res BW 100 kHz	#VBW 3	300 kHz	Sweep 2	Stop 26.50 GHz 530 s (30001 pts)
C C		MKR MODE TRC SCL	X Y 2.480 2 GHz -1.738 dBm 26.382 6 GHz -35.825 dBm 4.960 5 GHz -51.183 dBm	FUNCTION FUNCTION W	ADTH FUNCTI	IN VALUE
Sr c	ST CST C	4 N 1 f 6 N 1 f 6 7	7.397 5 GHz 50.117 dBn 9.876 0 GHz 51.621 dBn	n		
	\$ \$	9 10 11				~
		MSG		5	TATUS	







9. COUDUCTED PEAK OUTPUT POWER

9.1 Block Diagram Of Test Setup



9.2 Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

9.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

- 2. Set the spectrum analyzer: RBW = 2MHz. VBW = 6MHz. Sweep = auto; Detector Function = Peak.
- 3. Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.



9.4 Test Result

Mode	Channel.	Verdict	
	LCH	-1.328	PASS
EDR mode (GFSK)	MCH	-1.382	PASS
	НСН	-1.147	PASS
EDR mode (π/4DQPSK)	LCH	-0.512	PASS
	MCH O	-0.589	PASS C
	НСН	-0.415	PASS
	LCH	C C C-0.119 C C	PASS
EDR mode (8DPSK)	MCH	-0.182	PASS
	НСН	0.034	PASS



Test Graph: Graphs Avg Type: Log-Pwr Avg[Hold: 100/100 2.402000000 GHz Trig: Free Run Ref Offset 6.71 dB Ref 20.00 dBm 2.401 82 <mark>ا</mark> GFSK/LCH Span 10.00 MHz Sweep 1.000 ms (1001 pts) enter 2.402000 GHz Res BW 2.0 MHz #VBW 6.0 MHz Center Freq 2.441000000 GHz Avg Type: Log-Pwr Avg[Hold: 100/100 PNO: Fast ---- Trig: Free Run IFGain:Low #Atten: 30 dB Ref Offset 6.72 dB Ref 20.00 dBm GFSK/MCH Center 2.441000 GHz #Res BW 2.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts) #VBW 6.0 MHz nter Freq 2.480000000 GHz Avg Type: Log-Pwr Avg[Hold: 100/100 PNO: Fast ---- Trig: Free Run Ref Offset 6.73 dB Ref 20.00 dBm 2.479 81 GI -1.147 dB <mark>ا</mark> GFSK/HCH enter 2.480000 GHz Res BW 2.0 MHz Span 10.00 MHz Sweep 1.000 ms (1001 pts) #VBW 6.0 MHz

Report











10. 20DB OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limit

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125nw.

10.3 Test procedure

- 1. Rem1. Set RBW = 30 kHz.
- 2. Set the video bandwidth (VBW) \ge 3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Mode	Frequency	20dB Bandwidth (MHz)	Result
	Low channel	0.863	PASS
GFSK	Mid channel	0.876	PASS
	High channel	0.879	PASS
× × × ×	Low channel	1.273	PASS
π/4DQPSK	Mid channel	1.266	PASS
	High channel	1.283	PASS
LY LY LY	Low channel	1.299	PASS
8DPSK	Mid channel	1.299	PASS
	High channel	1.288	PASS

10.4 Test Result

Note: All modes of operation were Pre-scan and the worst-case emissions are reported.



Test Graph:





Shenzhen CTB Testing Technology Co., Ltd. Report No.: CTB220905011RFX





Shenzhen CTB Testing Technology Co., Ltd. Report No.: CTB220905011RFX





11. CARRIERFREQUENCIES SEPARATION

11.1 Block Diagram Of Test Setup



11.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125W.

11.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port

to the spectrum.

2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz , Span = 2MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.4 Test Result	1	1.4	Test Result
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Mode	Channel.	Carrier Frequency Separation [MHz]	Limit(2/3 of the 20dB bandwidth MHz)	Verdict
GFSK	LCH	C 1.000 C C	0.575	PASS
GFSK	MCH	1.002	0.584	PASS
GFSK	HCH	1.002	0.586	PASS
π/4DQPSK	LCH	1.002	0.849	PASS
π/4DQPSK	MCH	1.002	0.844	PASS
π/4DQPSK	НСН	1.002	0.855	PASS
8DPSK	LCH	1.002	0.866	PASS
8DPSK	MCH	C C 1.002 C C	0.866	PASS
8DPSK	HCH	1.000	0.859	PASS



Test Graph









	ST 657 6	glient Spectrum Analyzer - Swept SA R RF 50.0 AC Marker 1 ∆ 1.002000000 I		ALIGN AUTO Avg Type: Log-Pwr AvgHeld>100/100	10:03:47 AM Sep 05, 2022 TRACE 2, 3, 4, 5, 6 TVPE	S.	
	A A	Ref Offset 6.71 dB	IFGain:Low #Atten: 30 dB		Mkr1 1.002 MHz	<i>.</i>	
A A A	SV SV S	10 dB/div Ref 20.00 dBm			0.067 dB	SY	
		10.0	Xa		m		
× ~ ~ ~ ~	C ~ ~ ~	20.0				A P	
	C C	40.0					
8DPSK/LCH	9 Q 1	60.0				\$	
		Center 2.402500 GHz #Res BW 30 kHz	#VBW 100 kHz	Sweep	Span 2.000 MHz 2.133 ms (1001 pts)		
\$ \$ \$	A A .	MKR MODE TRC SCL X 1 Δ2 1 f (Δ) 2 F 1 f 2.40	Y FUNCTION 1.002 MHz (Δ) 0.067 dB 1.970 GHz -3.815 dBm	N FUNCTION WIDTH FU	NCTION VALUE	\$	
່ວົວົວ	ి చి చి	3 4 5					
& & &	\$ \$	6 7 8 9					
		10			~		
A A A	A A 4	86 igilent Spectrum Analyzer - Swept SA		STATUS			
Y SY SY	ST AT	Aarker 1 Δ 1.002000000 Marker 1 Δ 1.002000000 M	MHZ PNO: Wide Trig: Free Run Estated are	ALIGNAUTO Avg Type: Log-Pwr Avg Hold>100/100	10:04:48 AM Sep 05, 2022 TRACE 2 3 4 5 6 TVPE	S.	
		Ref Offset 6.72 dB	IPGaint. ov db	L	Mkr1 1.002 MHz -1.512 dB		
				.102		S	
	00	10.0	Xa		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
° 2° 2° .	S 2 1	30.0				29	
8DPSK /MCH	° ° ° °	50.0					
A A A	A & .	70.0				A	
		Senter 2.441500 GHz #Res BW 30 kHz	#VBW 100 kHz	Sweep	Span 2.000 MHz 2.133 ms (1001 pts)		
\$ \$ \$	A A .	1 Δ2 1 f (Δ) 2 F 1 f 2.44	1.002 MHz (Δ) -1.512 dB 0.968 GHz -5.346 dBm				
່ວົ້ວັ້ວ	້ວົ້ວ້	4 5 6 7					
\$ \$ \$	\$ \$	8 9 10					
		sc		STATUS	>		
\$ \$ \$	A A	glient Spectrum Analyzer - Swept SA R RF 50.0 AC	SENSE:2NT	ALIGNAUTO	10:05:44 AM Sep 05, 2022	4	4
			PNO: Wide Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Held>100/100	TYPE MULTING	S	
	A A	Ref Offset 6.73 dB			1.425 dB		
A A A A A A	5 × 5 × 6	10.0	Xa			S	
		20.0					
Y 47 47	ST . ST . 1	40.0				A P	
8DPSK /HCH	C C	60.0					
P 2 2	S & 1	Center 2.479500 GHz	#3/733// 400 1/1-		Span 2.000 MHz	2	
			+VBW 100 KHz Υ FUNCTION 1.000 MHz (Δ) 1.425 dB	N FUNCTION WIDTH FU	ALLOSTING (TOUT PIS)		
\$ \$ \$	A A .	2 F 1 f 2.47	8 976 GHz -5.464 dBm			.0	
ి చిచిన	້ວ້ວ້	6 7 8					
\$ \$ \$	\$ \$	9 10 11			~		
5 5		sa		STATUS		5	



12. HOPPING CHANNEL NUMBER

12.1 Block Diagram Of Test Setup



12.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

12.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum. 2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.

4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.4835GHz. Sweep=auto;

12.4 Test Result

Mode	Channel.	Number of Hopping Channel	Verdict
GFSK	Нор	C C C 79 C C C	PASS
π/4DQPSK	Нор	 79 79 	PASS
8DPSK	Нор	79	PASS



Test Graph Graphs q 2.441750000 GHz Avg Type: Log-Pwr Avg[Hold: 5000/5000 0: Fast --- Trig: Free Run Ref Offset 6.71 dB Ref 20.00 dBm GFSK/Hop Start 2.40000 GH; #Res BW 100 kH Stop 2.48350 GHz Sweep 8.000 ms (1001 pts #VBW 300 kHz 2.401 837 0 GHz 2.479 909 5 GHz -1.444 dBm -1.410 dBm Center Freq 2.441750000 GHz Avg Type: Log-Pwr Avg[Hold: 5000/5000 PNO: Fast ---- Trig: Free Run IFGain:Low #Atten: 30 dB Ref Offset 6.71 dB Ref 20.00 dBm π/4DQPSK/Hop Start 2.40000 GHz Res BW 100 kHz Stop 2.48350 GHz #VBW 300 kHz 2.401 586 5 GHz 2.480 160 0 GHz -7.282 dBm -5.547 dBm nter Freg 2.441750000 GHz Avg Type: Log-Pwr AvgHold: 5000/5000 0: Fast --- Trig: Free Run #Atten: 30 dB Ref Offset 6.71 dB Ref 20.00 dBm 1 837 0 -1.690 wanter all and a stand and a mm 8DPSK/Hop Stop 2.48350 GHz Sweep 8.000 ms (1001 pts) rt 2.40000 GH #VBW 300 kHz 2.401 837 0 GHz 2.480 327 0 GHz -1.690 dBm -6.621 dBm



13. DWELL TIME

13.1 Block Diagram Of Test Setup



13.2 Limit

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

13.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum. 2. Set spectrum analyzer span = 0. Centred on a hopping channel;

3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Set the EUT for DH5, DH3 and DH1 packet transmitting.

4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).



13.4 Test Result

Mode	Packet	Channel	Pulse Time (ms)	Total Dwell Time (ms)	Limit (ms)	Verdict
5	DH1	LCH	0.376	120.32	400	PASS
	DH1	MCH	0.376	120.32	400	PASS
	DH1	HCH	0.376	120.32	400	PASS
	DH3	LCH	1.637	261.92	400	PASS
GFSK	DH3	MCH	1.637	261.92	400	PASS
\$	DH3	HCH	1.638	262.08	400	PASS
	DH5	LCH	2.888	308.053	400	PASS
4	DH5	MCH	2.887	307.947	400	PASS
	DH5	HCH	2.887	307.947	400	PASS

Remark: DH5 Packet permit maximum 1600 / 79 / 6 hops per second in each channel (5 time slots RX, 1 time slot TX).

DH3 Packet permit maximum 1600 / 79 / 4 hops per second in each channel (3 time slots RX, 1 time slot TX).

DH1 Packet permit maximum 1600 / 79 /2 hops per second in each channel (1 time slot RX, 1 time slot TX). So, the Dwell Time can be calculated as follows:

DH5:1600/79/6*0.4*79*(MkrDelta)/1000 DH3:1600/79/4*0.4*79*(MkrDelta)/1000 DH1:1600/79/2*0.4*79*(MkrDelta)/1000 Remark: Mkr Delta is once pulse time.



Test Graph

Graphs										
	Aglent Spestrum Analyzer - Swrgt SA Alt2/L0/TO 09/31:12.04/9405, 202 21 A 67 50 0 45 09/31:12.04/9405, 202 Center Freq 2.402000000 GHz Trig Delay 500.0 µS Avg Type: Log Pwr 19/40 19/40 IF Gain:Low Frig: Video Address 200 10/40 10/40 10/40 10 dB/div Ref Onfset 6.71 dB									
* 5 * 5 * 5 *										
GFSK_DH1/LCH	Center 2.402000000 GHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (10001 pts)									
	MRR MODE TRC SQL X Y PINCTION PINCTION PINCTION PINCTION WOTH PINCTION VALUE 1 1 1 1 376.0 µs (Δ) 97.4 µB 1									
5 5 5 \$ \$	Agtivet Spectrum Analyzer Swigt SA All 2/LADID 002-25:01.08.04005,2022 21 A 67 100 0 20 71g Delay 50.0 µs Avg Type: Log Pur 072:02:00.0000 CM2 Center Freq 2.44100.00000 GHz Trig Delay 50.0 µs Avg Type: Log Pur 100:20:20:20 100:20:20:20 PHO: Fast Trig Delay 50.0 µs Avg Type: Log Pur 10:20:20:20 10:20:20:20 Ref Offset 5.72 dB 10:0EB/dig Ref Offset 5.72 dB 10:40:40:40 10:40:40	\$ \$								
GFSK_DH1/MCH	Center 2.441000000 GHz Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (10001 pts)									
	MRR MODE TRC: SQ. X Y PINCTION RANCTION WOTH PINCTION VALUE 1 4 1 1 376.0 µs (d.) -10.49 dBm 1 <	P CTP								
	Algend Spectrum Analyzer Sweet SA Can be a for									
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GFSK_DH1/HCH	Center 2,48000000 GHz Span 0 Hz									
	Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.000 ms (10001 pts) WR MORE THE SQL X Y PLACTON PLACTON PLACTON WOTH PLACTON WOTH PLACTON VALUE X Y PLACTON VALUE X Y PLACTON PLACTON WOTH PLACTON VALUE X Y PLACTON Y PLACTON VALUE Y PLACTON VALUE Y PLACTON VALUE Y Y PLACTON VALUE Y PLACTON VALUE Y PLACTON VALUE Y Y PLACTON VALUE Y Y PLACTON VALUE Y Y PLACTON VALUE Y									



	Cr Cr	Agilent Spectrum Analyzer - Swept	AC 1000 GHz PNO: Fast IFGain:Low	SENSE:INT Trig Delay-500.0 µs Trig: Video #Atten: 30 dB	ALIGNAUTO Avg Type: Log-Pwr	09:50:39 AM Sep 05, 2022 TRACE 2 2 3 4 5 4 TYPE DET PINNININ	° c
	1 4 A	Ref Offset 6.71	dB 3m			ΔMkr1 1.637 ms 1.35 dB	
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	C ~ C ~	-30.0 -40.0				1990 LVL	
GFSK_DH3/LCH	2 2 x					hielder (
		Center 2.402000000 GH Res BW 1.0 MHz	Iz #V × Y	VBW 3.0 MHz	Sweep 3	Span 0 Hz 3.000 ms (10001 pts) CTION VALUE	0
	6 ° ° °	1 Δ2 1 t (Δ) 2 F 1 t 3 3 - - - - 4 - - - - 5 - - - -	1.637 ms (Δ) 500.1 μs -7.	1.35 dB .08 dBm			N 65
	A 4	6 7 8 9 10					\$ x
<u> </u>	C' C'	MSG		. d	STATUS	>	C)
	65 ° 65	Center Freq 2.441000	AC 1000 GHz PNO: Fast IFGain:Low	SENSE: MT Trig Delay-500.0 µs Trig: Video #Atten: 30 dB	ALIGNAUTO Avg Type: Log-Pwr	09:53:52 AM Sep 05, 2022 TRACE 2 2 3 4 5 6 TYPE DET P N N N N N	× 5
		Ref Offset 6.72	dB 3m			ΔMkr1 1.637 ms 3.24 dB	
	C C		2	all the field of the charded			0
	6 5 ° 6 5	-40.0			huter at	190 LV.	1
GFSK_DH3/MCH		-60.0 -70.0				t da hi andra	
	C C	Center 2,441000000 GH Res BW 1.0 MHz	1z #₩ × • • • • • • • •	VBW 3.0 MHz	Sweep 3	Span 0 Hz 3.000 ms (10001 pts) CTION VALUE	6
	19 19 19 19	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	500.1 µs -8.	34 dBm			8
		7 8 9 10					
<u> </u>	00	K MSG Agilent Spectrum Analyzer - Swept	r SA		STATUS	<u>></u> *	6
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	00 R RF 50 Q Center Freq 2.480000	AC 0000 GHz PNO: Fast IFGain:Low	SENSE:NT Trig Delay-500.0 µs Trig: Video ≴Atten: 30 dB	ALIGNAUTO Avg Type: Log-Pwr	09:55:32 AM Sep 05, 2022 TRACE 2 2 3 4 5 0 TVPI DET 9 N.N.N.N.N	
		Ref Offset 6.73	dB 3m			∆Mkr1 1.638 ms -3.72 dB	\$
GFSK_DH3/HCH	C C	-10.0	2		1Δ2		6
	A 9 A	-30.0 -40.0 -50.0 Jündelan Lefer, Kelusel			tarai akartés	ilistal derite bester ter ter ter ter ter ter ter ter ter	
					inder in	Asta Harind manual A	\$
	C ~ C	Center 2.480000000 GH Res BW 1.0 MHz	12 #V × 1638 mm (/Δ)	VBW 3.0 MHz	Sweep 3	Span 0 Hz 3.000 ms (10001 pts) CTION VALUE	5
	2 2 x	2 F 1 t 3 4	500.1 μs -10.	10 dBm			*
		7 8 9 10					6
AV AV A		KSG		<i></i>	STATUS	>	



	5° 65° 65	Agilent Spectrum Analyzer - Swept SA	GHz SENSE:NT Trig Delay-500.0 µs PNC: East → Trig: Video	ALIGNAUTO Avg Type: Log-Pwr	10:07:21 AM Sep 05, 2022 TRACE 2 2 3 4 5 6 TYPE	
	A . A .	Ref Offset 6.71 dB 10 dB/div Ref 20.00 dBm	IFGain:Low #Atten: 30 dB	ΔΜ	kr1 2.888 ms -1.69 dB	
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	3 x x	-10.0 X2			TROLVL	
		-40.0 -60.0 March haart			ushephetel this starte	
GFSK_DH5/LCH	5 2 5 5				an filingen i de filinge de state	
		Center 2.402000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz Y FUNCTION F	Sweep 5.000	Span 0 Hz 0 ms (10001 pts)	
	5° 5° 5	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2,888 ms (Δ) -1,69 dB 499.5 μs -8,31 dBm			
	A .A .					
	S. 5. 5	10 11 <		STATUS	×	
\$ \$ \$ \$		Aglient Spectrum Analyzer - Swept SA	GHz Trig Delay-500.0 us	ALIGNAUTO Avg Type: Log-Pwr	10:17:21 AM Sep 05, 2022 TRACE	\$
		Ref Offset 6.72 dB	PNO: Fast Trig: Video IFGain:Low #Atten: 30 dB	ΔΜ	kr1 2.887 ms	
	5 5 5	10 dB/div Ref 20.00 dBm			1.16 dB	
		-10.0 -20.0	l seles a direct y elle to show to the second station		1990 LVL	
	5° 55° 55	-30.0 -40.0 -0.0		add to mit a light of a light of	n di di wata kashi da	
GFSK_DH5/MCH	A . A .	-60.0 -70.0			in), på jörer bliket	
	C C	Center 2.441000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 5.000	Span 0 Hz 0 ms (10001 pts)	
	3 2 x	1 Δ2 1 t (Δ) 2 F 1 t 3	2.887 ms (Δ) 1.16 dB 500.0 μs -15.24 dBm	INCTION WIDTH POINCTION	ALGE	
	0 0	5 6 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9				
	5° 5° 5	9 10 11	F.		×	
		MSG Agilent Spectrum Analyzer - Swept SA UX R RF 50 Q AC	SENSE:INT	ALIGNAUTO	10:17:11 AM Sep 05, 2022	
	5° 5° 5	Center Freq 2.480000000	PN0: Fast Trig: Delay-600.0 µs PN0: Fast Trig: Video IFGain:Low #Atten: 30 dB	Avg Type: Log-Pwr	kr1 2.887 ms	
	A . A .	10 dB/div Ref 20.00 dBm		.102	1.98 dB	
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GFSK_DH5/HCH	0,0,0	-50.0 14 14 19 14 14 14 14 14 14 14 14 14 14 14 14 14		al the first state of the	dali propulsi dali di	
	5° 5° 5	Center 2.480000000 GHz Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 5.000	Span 0 Hz 0 ms (10001 pts)	
		MKR MODE TRC SCL Χ 1 Δ2 1 t (Δ) 2 F 1 t	Y FUNCTION FI 2.887 ms (Δ) 1.98 dB 500.0 μs -5.31 dBm	JNCTION WIDTH FUNCTION	VALUE	
	SY CSY CS	4 6 7				
	A . A .	9 10 11			×	
	N. N. N	MSG		STATUS		5



14. PSEUDORANDOM FREQUENCY

14.1 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

14.2 Test procedure

The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones. • Number of shift register stages: 9

- Length of pseudo-random sequence: 29 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



An example of Pseudorandom Frequency Hopping Sequence as follow:

20 62 46 77	7	64 8	7	73	16	75	1	
			Ι					
			I					
		LlL	T	<u></u>				

Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their Corresponding transmitters and shift frequencies in synchronization with the transmitted signals.



14.3 Test Result

The device does not have the ability to be coordinated with other FHSS systems in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitters.



15. ANTENNA REQUIREMENT

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is PCB antenna. The best case gain of the antenna is -0.68dBi.



16. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission







Conducted emissions



******** END OF REPORT ******